

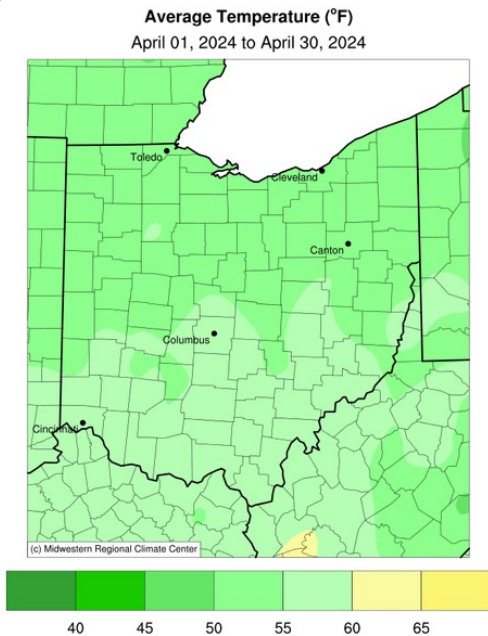


Review – April 2024

Temperature

Temperatures in Ohio were consistently warm throughout April. Average temperatures were very similar across the state, ranging around 50-55°F in the north and 55-60°F in the southern half (Fig. 1a). Temperature departures were more varied across Ohio with the majority of the state being around 2-4°F above normal with small regions in the northeast being 4-6°F above normal and southwest being 1-2°F above normal (Fig. 1b). At the county level, almost the entire state ranked in the warmest tenth of their historical record. Clark, Geauga, Wayne, and 6 other counties in southwestern Ohio recorded their third warmest April. Overall, this ranked as the seventh warmest April for the entire state.

a)



b)

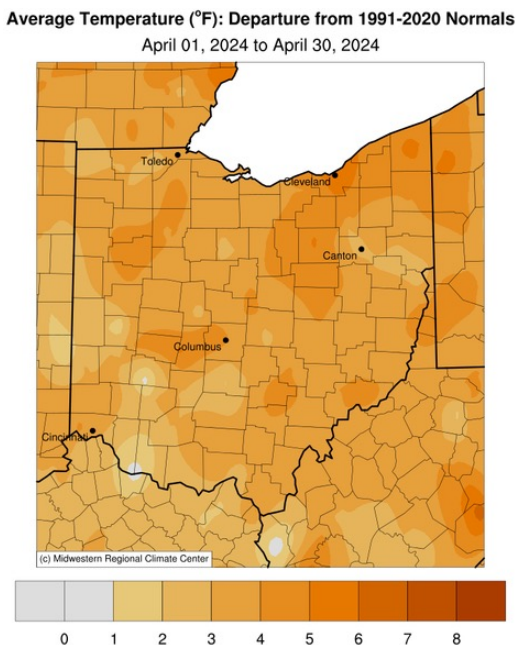


Figure 1a: Average temperature and 1b: Departure from Normal for the month of April 2024. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

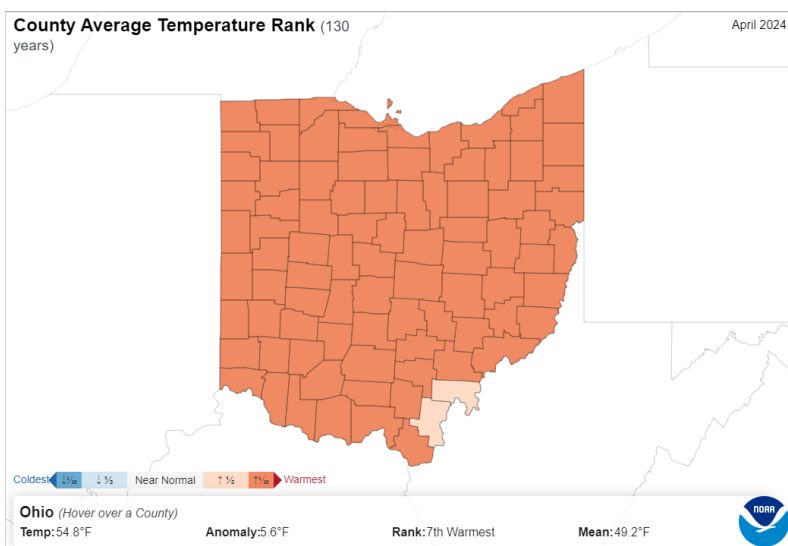


Figure 2: State of Ohio average temperature ranks by county for April 2024. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).



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Precipitation

Multiple heavy precipitation events throughout April led to above-average accumulated precipitation across most of the state. An interesting pattern can be observed across central Ohio of 6 to 8 inches of accumulated precipitation while northern and southern Ohio recorded around 3 to 6 inches of accumulated precipitation (Fig. 3a). A similar trend can also be observed in the accumulated precipitation departure map with values of 2 to 4 inches above normal across the central belt of the state. While most of Ohio experienced departures 0 to 2 inches above normal, a small part of the southwestern region recorded 0 to 1 inch below normal levels (Fig. 3b). At the county level, the bulk of the state ranked in the wettest third of their record. The trend of increased precipitation across the central belt and into the northwest can be observed with most of these counties ranking in the wettest tenth of their record. Van Wert County observed its wettest April on record.

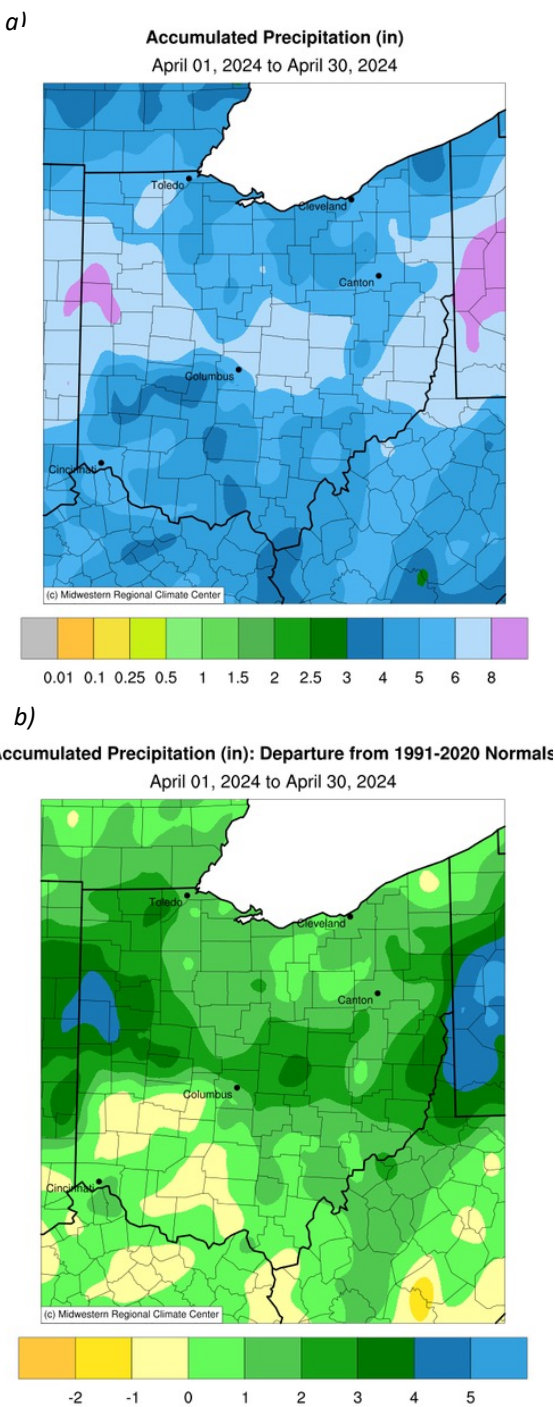


Figure 3a: Accumulated precipitation and 3b: Departures from Normal for the month of April 2024. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).

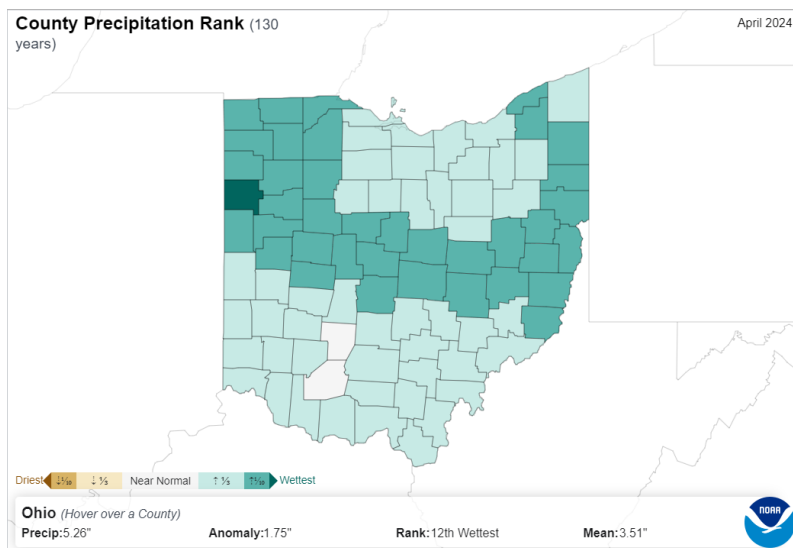
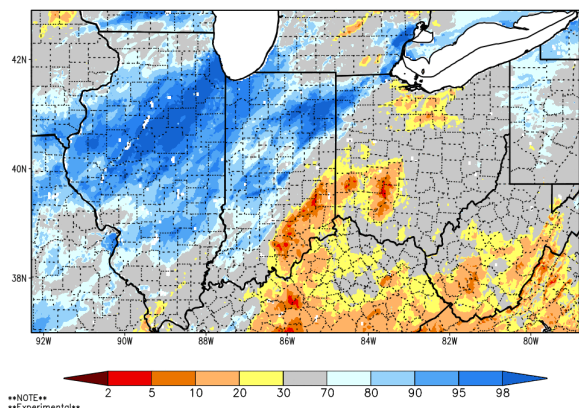


Figure 4: State of Ohio precipitation ranks by county for April 2024. Courtesy of the National Centers for Environmental Information (<https://www.ncdc.noaa.gov/sotc/>).



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a) SPoRT-LIS 0–40 cm Soil Moisture percentile valid 30 Apr 2024



b) SPoRT-LIS 0–200 cm Soil Moisture percentile valid 30 Apr 2024

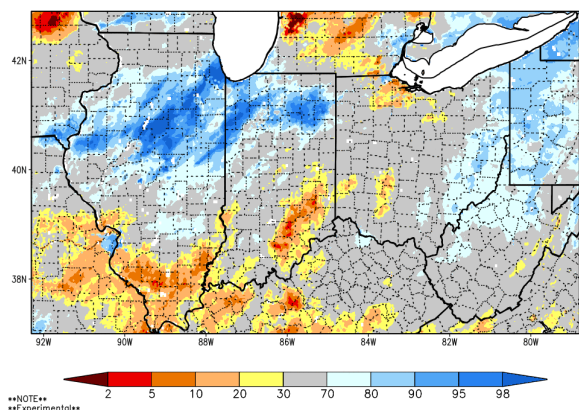


Figure 5a: 0–40 cm and 5b: 0–200 cm soil moisture percentile across the region at the end of April 2024. Courtesy of NASA SPoRTLIS (https://weather.msfc.nasa.gov/sport/case_studies/lis_IN.html).

Soil and Energy

Multiple precipitation events throughout April have led to moderate soil conditions across most of Ohio at the end of the month. Some regions of dryness that were observed in March can still be identified but they were reduced significantly. The 0-40 cm map shows pockets of dry soil in the southwest and northern central regions while wet soil can be observed in the northwest regions of the state (Fig 5a). In the 0-200 cm map, less variety in moisture conditions can be observed with most of the state seeing moderate conditions while the eastern border of the state shows slightly moist soil conditions (Fig 5b).

Warmer-than-average temperatures for April have led to a shift away from the near-zero number of Cooling-Degree Days (CDDs). Additionally, warm temperatures led to significantly fewer Heating Degree Days (HDDs) than normal which is beneficial for the decrease in energy consumption in Ohio (Fig. 6).

Product Note: Both NASA SPoRT LIS soil moisture products contain small pockets of inaccurate data indicating extremely wet or dry conditions. These small-scale errors can emerge in remote sensing products covering large areas or grid-spacings. For more information, please contact Geddy Davis (davis.5694@osu.edu).

Climate Division	Heating Degree Days	Normal	Departure	Cooling Degree Days	Normal	Departure
1	374	479	-105	10	5	5
2	351	474	-124	13	5	8
3	384	506	-121	9	4	5
4	329	424	-96	14	6	8
5	306	401	-94	16	6	9
6	337	453	-116	13	4	8
7	340	440	-101	10	4	6
8	302	368	-66	22	8	14
9	263	342	-79	20	9	11
10	289	387	-98	12	6	6
State	328	427	-100	14	6	8



Figure 6: (Left) April 2024 heating & cooling degree days. (Right) Corresponding Ohio Climate Divisions. Data courtesy of the Midwestern Regional Climate Center (<http://mrcc.purdue.edu>).



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Notable Events

The month of April had a few notable events across Ohio but the most impactful was likely the flooding that occurred on April 2nd. These flood conditions developed as a result of the major precipitation event that took place on that day. Subsequent days with rain would prolong flood conditions through the early half of the month. The Ohio, Monongahela, and similar rivers reached water levels that indicated moderate to major levels of flooding on April 4th. These flood conditions led to many complications across the state. Farmers and the agriculture sector experienced numerous impacts such as a reduction of fieldwork days, flooded field plots, and runoff issues. Luckily, many Ohio farmers had not yet planted their crops, so flood conditions mostly delayed the beginning of their planting period rather than damaging already planted fields. For fields that were already planted, it will be important to monitor the emergence of these plants to estimate the impacts that this event will have as we transition into the growing season (Fig. 7). Flooding also led to water overtaking many roadways near the Ohio River and across the central belt. As these roadways became inundated, an increase in traffic delays and the risk of accidents developed (Fig. 8). Devastatingly at least three individuals lost their lives as flood waters overtook their vehicles. According to the Marietta Times, the Ohio River level reached 37 feet causing many homes and businesses to be inaccessible due to multiple roadways shut down in the city.



Figure 7: Image pulled from video of flooded soybean fields in Clark County, Ohio at the Western Agriculture Research Center on April 11th. Courtesy of OSU Agronomy (<https://youtu.be/r1Tl6cKlOpk?si=wTw1OPWvJdCqgrz3>).



Figure 8: Photo taken from Ohio Department of Transportation street camera on I-70 as water overtakes highway on April 3rd, 2024. Courtesy of Ohio Department of Transportation (<https://www.transportation.ohio.gov/>).



Forecast: May - July

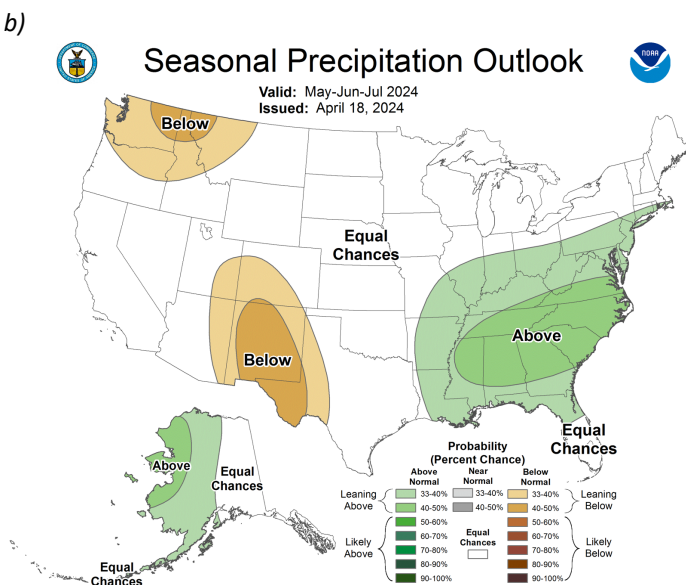
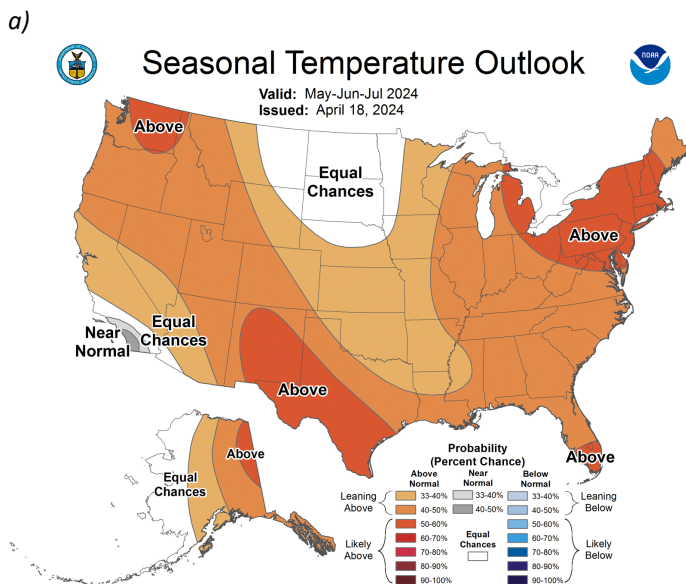


Figure 9a: Nationwide Seasonal Temperature and 9b: Precipitation Outlook for May-July. Courtesy of the Climate Prediction Center (<https://www.cpc.ncep.noaa.gov/>).

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Looking Ahead

The CPC’s 3-month outlook continues to predict a moderate probability of above-average temperatures for Ohio in the summer season. The northeastern half of the state has higher confidence of above-normal temperatures while the southwestern half still predicts above-normal temperatures but with slightly less certainty (Fig. 9a). The precipitation outlook indicates central and southern Ohio has a slight probability of above-normal precipitation while northern Ohio has equal chances of above or below-normal levels of precipitation (Fig. 9b). Potentially warmer and wetter than average conditions could prove to be beneficial for fast plant growth, but an overabundance could cause waterlogged crops, fungi, and other issues to develop. Additionally, these conditions could also lead to increased energy consumption due to the greater need to cool residences and businesses. It will be important to monitor the probability and severity of these conditions as people begin participating in outdoor summer activities.

Note: these outlooks do not provide the quantity of above or below normal conditions, just the likelihood of occurrence (i.e., the probability).

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